CLAIMS

What is claimed is:

1. An isolated polypeptide having β-catenin pathway activity comprising a polypeptide sequence selected from the group consisting of:

(a) the polypeptide sequence of Figure 13 (Cadherin V Perturbagen);

(b) the polypeptide sequence of Figure 14 (Cadherin VI Perturbagen);

(c) the polypeptide sequence of Figure 15 (Cadherin XI Perturbagen);

(d) biologically active modifications of (a), (b) or (c); and

(e) biologically active fragments of (a), (b) or (c).

2. The isolated polypeptide of claim 1 wherein said isolated polypeptide is (a) (b) or (c).

3. The isolated polypeptide of claim 1 consisting essentially of the sequence of Figure 13 (Cadherin V Perturbagen).

4. The isolated polypeptide of claim 3 wherein said isolated polypeptide comprises the amino acid sequence of Figure 13 (Cadherin V Perturbagen) except for one or more conservative amino acid substitutions.

5. The isolated polypeptide of claim 2 consisting of Figure 13 (Cadherin V Perturbagen).

6. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 99% identical to the amino acid sequence of Figure 13 (Cadherin V Perturbagen).

7. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 95% identical to the amino acid sequence of Figure 13 (Cadherin V Perturbagen).

8. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 90% identical to the amino acid sequence of Figure 13 (Cadherin V Perturbagen).

9. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 85% identical to the amino acid sequence of Figure 13 (Cadherin V Perturbagen).

10. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 80% identical to the amino acid sequence of Figure 13 (Cadherin V Perturbagen).

11. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a biologically active fragment of sequence Figure 13 (Cadherin V Perturbagen) displaying a shift in β-catenin-correlated reporter expression.

12. The isolated polypeptide of claim 1 wherein said isolated polypeptide is a closely related analog of Figure 13 (Cadherin V Perturbagen) wherein said analog displays biological activity of a shift in β-catenin-correlated reporter expression.

13. The isolated polypeptide of claim 1 wherein said isolated polypeptide is an antigenic analog of Figure 13 (Cadherin V Perturbagen) wherein said analog binds to an antibody specific for the polypeptide of Figure 13 (Cadherin V Perturbagen).

14. The isolated polypeptide of claim 1 wherein said isolated polypeptide is an N-terminal fragment of Figure 13 (Cadherin V Perturbagen).

15. The isolated polypeptide of claim 14 wherein said N-terminal fragment comprises at least 10 amino acids of Figure 13 (Cadherin V Perturbagen).

16. The isolated polypeptide of claim 1 wherein said isolated polypeptide is a C-terminal fragment of Figure 13 (Cadherin V Perturbagen).

17. The isolated polypeptide of claim 16 wherein said C-terminal fragment comprises at least 10 amino acids of Figure 13 (Cadherin V Perturbagen).

18. The isolated polypeptide of claim 1 consisting essentially of the sequence of Figure 14 (Cadherin VI Perturbagen).

19. The isolated polypeptide of claim 3 wherein said isolated polypeptide comprises the amino acid sequence of Figure 14 (Cadherin VI Perturbagen) except for one or more conservative amino acid substitutions.

20. The isolated polypeptide of claim 2 consisting of Figure 14 (Cadherin VI Perturbagen).

21. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 99% identical to the amino acid sequence of Figure 14 (Cadherin VI Perturbagen).

22. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 95% identical to the amino acid sequence of Figure 14 (Cadherin VI Perturbagen).

23. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 90% identical to the amino acid sequence of Figure 14 (Cadherin VI Perturbagen).

24. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 85% identical to the amino acid sequence of Figure 14 (Cadherin VI Perturbagen).

25. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 80% identical to the amino acid sequence of Figure 14 (Cadherin VI Perturbagen).

26. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a biologically active fragment of sequence Figure 14 (Cadherin VI Perturbagen) displaying a shift in β-catenin-correlated reporter expression.

27. The isolated polypeptide of claim 1 wherein said isolated polypeptide is a closely related analog of Figure 14 (Cadherin VI Perturbagen) wherein said analog displays biological activity of a shift in β-catenin-correlated reporter expression.

28. The isolated polypeptide of claim 1 wherein said isolated polypeptide is an antigenic analog of Figure 14 (Cadherin VI Perturbagen) wherein said analog binds to an antibody specific for the polypeptide of Figure 14 (Cadherin VI Perturbagen).

29. The isolated polypeptide of claim 1 wherein said isolated polypeptide is an N-terminal fragment of Figure 14 (Cadherin VI Perturbagen).

30. The isolated polypeptide of claim 29 wherein said N-terminal fragment comprises at least 10 amino acids of Figure 14 (Cadherin VI Perturbagen).

31. The isolated polypeptide of claim 1 wherein said isolated polypeptide is a C-terminal fragment of Figure 14 (Cadherin VI Perturbagen).

32. The isolated polypeptide of claim 31 wherein said C-terminal fragment comprises at least 10 amino acids of Figure 14 (Cadherin VI Perturbagen).

33. The isolated polypeptide of claim 1 consisting essentially of the sequence of Figure 15 (Cadherin XI Perturbagen).

34. The isolated polypeptide of claim 3 wherein said isolated polypeptide comprises the amino acid sequence of Figure 15 (Cadherin XI Perturbagen) except for one or more conservative amino acid substitutions.

35. The isolated polypeptide of claim 2 consisting of Figure 15 (Cadherin XI Perturbagen).

36. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 99% identical to the amino acid sequence of Figure 15 (Cadherin XI Perturbagen).

37. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 95% identical to the amino acid sequence of Figure 15 (Cadherin XI Perturbagen).

38. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 90% identical to the amino acid sequence of Figure 15 (Cadherin XI Perturbagen).

39. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 85% identical to the amino acid sequence of Figure 15 (Cadherin XI Perturbagen).

40. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a sequence at least 80% identical to the amino acid sequence of Figure 15 (Cadherin XI Perturbagen).

41. The isolated polypeptide of claim 1 wherein said isolated polypeptide comprises a biologically active fragment of sequence Figure 15 (Cadherin XI Perturbagen) displaying a shift in β-catenin-correlated reporter expression.

42. The isolated polypeptide of claim 1 wherein said isolated polypeptide is a closely related analog of Figure 15 (Cadherin XI Perturbagen) wherein said analog displays biological activity of a shift in β-catenin-correlated reporter expression.

43. The isolated polypeptide of claim 1 wherein said isolated polypeptide is an antigenic analog of Figure 15 (Cadherin XI Perturbagen) wherein said analog binds to an antibody specific for the polypeptide of Figure 15 (Cadherin XI Perturbagen).

44. The isolated polypeptide of claim 1 wherein said isolated polypeptide is an N-terminal fragment of Figure 15 (Cadherin XI Perturbagen).

45. The isolated polypeptide of claim 44 wherein said N-terminal fragment comprises at least 10 amino acids of Figure 15 (Cadherin XI Perturbagen).

46. The isolated polypeptide of claim 1 wherein said isolated polypeptide is a C-terminal fragment of Figure 15 (Cadherin XI Perturbagen).

47. The isolated polypeptide of claim 46 wherein said C-terminal fragment comprises at least 10 amino acids of Figure 15 (Cadherin XI Perturbagen).

48. The polypeptide of claim 1 wherein said polypeptide is fused to heterologous sequence.

49. The polypeptide of claim 48 wherein said heterologous sequence is a scaffold.

50. The polypeptide of claim 49 wherein said scaffold is a fluorescent protein.

51. The polypeptide of claim 1 wherein said polypeptide is chemically modified.

52. The polypeptide of claim 51 wherein said polypeptide is radio labeled.

53. The polypeptide of claim 51 wherein said modification is selected from the group consisting of acetylation, glycosylation, or fluorescent tagging.

54. The polypeptide of claim 1 wherein said polypeptide is chemically synthesized.

55. An isolated polynucleotide encoding a polypeptide of claim 1.

56. The isolated polynucleotide of claim 55, wherein said polypeptide encodes sequences (a) (b) or (c).

57. An isolated polynucleotide encoding a polypeptide of claim 3, 18 or 33.

58. An isolated polynucleotide encoding a polypeptide of claim 4, 19 or 34.

59. An isolated polynucleotide encoding a polypeptide of claim 5, 20 or 35.

60. An isolated polynucleotide encoding a polypeptide of claim 6, 21 or 36.

61. An isolated polynucleotide encoding a polypeptide of claim 7, 22 or 37.

62. An isolated polynucleotide encoding a polypeptide of claim 8, 23 or 38.

63. An isolated polynucleotide encoding a polypeptide of claim 9, 24 or 39.

64. An isolated polynucleotide encoding a polypeptide of claim 10, 25 or 40.

65. An isolated polynucleotide encoding a polypeptide of claim 14, 29 or 44.

66. An isolated polynucleotide encoding a polypeptide of claim 16, 31 or 46.

67. An isolated polynucleotide comprising the DNA sequence selected from a group consisting of:

(a) Figure 13 (Cadherin V Perturbagen);

(b) Figure 14 (Cadherin VI Perturbagen); and

(c) Figure 15 (Cadherin XI Perturbagen).

68. An isolated polynucleotide of claim 67 wherein said isolated polynucleotide is (a).

69. An isolated polynucleotide of claim 67 wherein said isolated polynucleotide is (b).

70. An isolated polynucleotide of claim 67 wherein said isolated polynucleotide is (c).

71. An isolated polynucleotide consisting essentially of the sequence of Figure 13 (Cadherin V Perturbagen).

72. An isolated polynucleotide consisting essentially of the sequence of Figure 14 (Cadherin VI Perturbagen).

73. An isolated polynucleotide consisting essentially of the sequence of Figure 15 (Cadherin XI Perturbagen).

74. The isolated polynucleotide of any one of claims 68, 69 or 70 wherein said isolated polynucleotide comprises a sequence at least 99% identical to said polynucleotide.

75. The isolated polynucleotide of any one of claims 68, 69 or 70 wherein said isolated polynucleotide comprises a sequence at least 95% identical to said polynucleotide.

76. The isolated polynucleotide of any one of claims 68, 69 or 70 wherein said isolated polynucleotide comprises a sequence at least 90% identical to said polynucleotide.

77. The isolated polynucleotide of any one of claims 68, 69 or 70 wherein said isolated polynucleotide comprises a sequence at least 85% identical to said polynucleotide.

78. The isolated polynucleotide of any one of claims 68, 69 or 70 wherein said isolated polynucleotide comprises a sequence at least 80% identical to said polynucleotide.

79. A vector comprising the polynucleotide of any one of claims 55, 56, 67, 71, 72 or 73.

80. The vector of claim 79, wherein said vector provides inducible expression.

81. A gene therapy vector comprising the polynucleotide of claims 55, 56, 67, 71, 72 or 73.

82. A host cell comprising the vector of claim 79.

83. A polynucleotide that hybridizes under stringent conditions to the polynucleotide of any one of claims 55, 56, 67, 71, 72 or 73.

84. A method for producing a β-catenin pathway related polypeptide comprising culturing a population of host cells of claim 82 under conditions suitable for the

expression of an encoded polypeptide and recovering expressed polypeptide from the host cell culture.

85. A composition comprising the polypeptide of claims 1, 2, 3, 18 or 33 in a pharmaceutically acceptable carrier.

86. An antibody to the polypeptide of claims 1, 2, 3, 18 or 33.

87. A method of identifying a cellular target that interacts with a β-catenin pathway related polypeptide, comprising the steps of exposing a polypeptide of claim 1 to putative target molecules and identifying a polypeptide/target interaction pair.

88. The method of claim 87 wherein said step of exposing is performed *in vitro* and said step of identifying comprises detecting reporter expression, wherein said reporter expression is operatively linked to the formation of said interaction pair.

89. The method of claim 88 wherein said method is a yeast two-hybrid assay.

90. A method of screening for putative β-catenin-related therapeutics, comprising the steps of:

a) exposing a polypeptide/target interaction pair obtained by the method of claim 87 to a plurality of agents; and

b) recovering a subpopulation of disrupting agents which competitively displace said polypeptide from said target; wherein said disrupting agents are putative β-catenin-related therapeutics.

91. The method of claim 90, wherein said plurality of agents is a combinatorial chemical library.

92. A method of treating an β-catenin pathway related condition, comprising the step of administering a therapeutically effective amount of the polypeptide of claim 1, or a pharmaceutically acceptable salt thereof.